NEW SPECIES OF TEXAS FUNGI

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In the spring of 1909, the writers, in cooperation with the Bureau of Plant Industry, of the United States Department of Agriculture, began a Plant Disease Survey of the area designated as the San Antonio-Austin area. This area included the territory within a radius of one hundred miles of San Antonio, and collections were made at many points.

Parasitic species occurring on both wild and economic plants were collected, but attention was given chiefly to cultivated crops. As a result of this work, forty-one new species have been described and a total of two hundred and ninety-three species, on one hundred and ninety-three different hosts, have been recorded. They are distributed as follows:

	Species
On tree fruits	30
On small fruits	7
On truck crops	33
On cereals and field crops	13
On forage crops and grasses	25
On trees and shrubs	90
On greenhouse and garden plants	27
On wild plants	68

The complete report of the Plant Disease Survey is being published as a bulletin by the United States Department of Agriculture, and will contain figures illustrating practically all of the new species, descriptions of which are published here.

Dimerosporium Parkinsoniae

Myceliis effusis, brunneis, septatis, ramosis; conidiis atro-brunneis, 1–4 loculis, muraliformibus; peritheciis gregariis, atris, subglobosis, ascis 8-sporiis, 45–50 × 12–15 μ, sporidiis hyalinis, inaequaliter biloculis, guttulatis, 15–18 × 4–6 μ.

On *Parkinsonia aculeata* L. Austin, *455;* Seguin, *2311* (*type*); Gonzales, *2658;* Hallettsville, *2901.*

The leaves and smaller twigs and even the smooth bark of larger branches are sometimes covered with sooty patches made up of dense aggregates of the brown septate hyphae.

Phleospora multimaculans

Maculis numerosis, definitis, irregularibus, orbicularibus v. angulatis, atro-brunneis vel purpurascentibus, 1–3 mm. diam. confluentibus, saepe partem majorem foliorum insidientibus; pycnidiis hypophyllis 30–45 μ diam.; sporulis cylindraceis, rectis curvulisve, 1–4-septatis, hyalinis, 20–50 $\times$ 3.5–5 μ.

On *Platanus occidentalis* L. Austin, *1398, 1535;* Brenham, *1462;* New Braunfels, *1682* (*type*); Llano, *1767;* Victoria, *2503;* Gonzales, *2655;* Floresville, *2558.* On *Juglans nigra* L. Austin, *1538, 2426;* Victoria, *2337;* Stockdale, *2621;* Gonzales, *2682;* Flatonia, *2721;* Falfurrias, *2460.* On *Juglans regia* L. Austin, *366;* Falfurrias, *2461.*

On the sycamore, definite, irregular, circular or angular spots, dark-brown or purple, and 1–3 mm. in diameter are produced on the upper surface of the living leaves. They frequently show a brown center and the under surface of the spot is brown throughout with a darker brown border. The spots frequently become confluent and produce dirty-brown extended areas. The spots may be very numerous and in nurseries much defoliation results.

On the walnut, this fungus produces subcircular spots 1 mm. in diameter, dark-brown with a darker border on the upper surface and uniformly brown on the under surface. The spots may be few in number or they may be so numerous as to almost completely cover the leaf. It is very severe in some cases and causes much defoliation.

Phleospora adusta

Areis initio marginalis dein effusis, irregularibus, brunneis, folium totum arescentibus adurentibusque; pycnidiis hypophyllis, sparsis, 30–50 μ diam.; sporulis cylindraceis, 1–3-septatis, hyalinis, 18–36 $\times$ 3–3.5 μ.

On living leaves of *Clematis Drummondii* T. &. G. New Braunfels, *1699;* Austin, *1726* (*type*); Llano, *1734;* Beeville,

1833; Sabinal, *1976;* Hondo, *1998;* Bastrop, *2021;* Seguin, *2303;* Georgetown, *2390;* Gonzales, *2654;* Kennedy, *2825.*

This leaf blight is very general and very severe. The foliage comes to have large, irregular, brown areas, generally beginning on the leaf tips. The entire leaf becomes dry, brown, and more or less curled in the advanced stages of the disease.

Phyllosticta biformis

Maculis orbicularibus, 2–5 mm. lat., griseis, atro-marginis; pycnidiis in foliis globosis ac in fructibus lenticularibus ostiolatis, 150 μ diam. Sporulis copiosis, granuloso farctis, hyalinis, 6–9 μ.

On *Diospyros texana* Scheele. Llano, *1789;* Austin, *1548, 2896 (type).*

The Mexican persimmon is affected by this fungus, which produces black pycnidia in clusters upon the upper surface of the leaves. At first they are surrounded by the green tissue but later a dark-margined spot 2–5 mm. in diameter is formed, which is grayish, with the black pycnidia distinctly visible. The pycnidia show on the fruit as minute pustules on slightly sunken spots, but are not very evident on account of the dark color of the fruit.

The pycnidia on the leaves are globose, ostiolate, and produce an abundance of hyaline, densely granular spores; the pycnidia on the fruit are much more flattened, and are covered by the very thick epidermal wall, but contain spores similar to those on the leaf except that they are dilutely brown in color.

Phyllosticta bumeliifolia

Maculis solitariis saepe confluentibus definitis, pallide brunneis, inferne pallidioribus, 3–6 mm. diam.; pycnidiis innatis, epiphyllis, nigris, 125–150 μ; sporulis globosis, granulosis, guttulatis, 9–15 μ diam.

On *Bumelia lanuginosa* Pers. Austin, *1549 (type), 3032.*

This fungus causes the formation of pale-brown spots on the living leaves. These spots vary in diameter from 3–6 mm. when circular or subcircular, but often the areas have fused so that much larger irregular spots are produced. The color is less

intense on the lower surface. Numerous black pycnidia open to the upper surface. In severe cases half of the leaf tissue may be involved.

Phyllosticta congesta

Maculis minutis, .5–.8 mm. diam., brunneis numerosis, venis limitatis; pycnidiis solitaris in quaque area, 50–125 μ diam.; sporulis globulosis vel leniter elongatis, hyalinis, 6–9 μ.

On *Prunus* sp. Boerne, *1554* (*type*).

On the upper surface of the leaf are very numerous brown areolae bounded by the veins of the leaf. The lower surface may not be discolored. These minute spots fuse, and each contains at its center a single black pycnidium. The pycnidia contain globular or slightly oval, clear spores.

Phyllosticta Verbesinae

Maculis numerosis, griseis, suborbicularibus zona atrofusca cinctis, 1–3 mm. diam.; pycnidiis epiphyllis, 36–45 μ; sporulis oblongis vel ellipticis 4–6 $\times$ 2.5–3 μ.

On *Verbesina texana* Buckl. Seguin, *2310* (*type*).

This fungus produces gray or whitish subcircular spots, 1–3 mm. in diameter, surrounded by an indefinite darker zone which fades out into the green tissue.

Septoria marginata

Maculis marginalis, effusis, dilute brunneis v. stramineis; peritheciis numerosis, amphigenis, brunneis vel nigris, 87–140 μ; poro leniter pertusis, sporulis hyalinis, rectis saepe curvulis, septatis, 40–60 $\times$ 2.5–3 μ.

On *Rulac texana* (Pax.) Small. Beeville, *1859;* Lockhart, *2060;* San Marcos, *2113* (*type*); Luling, *2279;* Seguin, *2286.*

The tips and margins of the leaves are killed, the dead areas being brick-red, light-brown, or straw-colored, or nearly gray in some cases, and confined to a narrow zone at the leaf tip or margin or extending back until the whole leaflet is involved. The advancing edge of the affected area is bordered by a narrow zone of yellow. The disease results in a considerable amount of defoliation with the appearance of having suffered from drought.

The spore measurements are identical in size with *Cylindro-*

sporium Negundinis Ell. & Ev., and the fungus was first referred to this species by the writers, since the extrusion of the spores from the pycnidia simulated acervuli in external appearance. It is possible that the two are identical.

Septoria Jatrophae

Maculis variis, 1–5 mm. latis, orbicularibus, interdum irregularibus, primo atro-brunneis, margine atro circumdatis, demum centro fulvescentibus vel saepe griseolis, confluentibus, partem majorem foliorum arescentibus; pycnidiis omnino immersis, brunneis, 120–150 μ; sporulis bacillaribus v. leniter clavatis, septatis hyalinis, 40–50 $\times$ 3 μ.

On *Jatropha stimulosa* Michx. Austin, *2429* (*type*).

The species causes the formation of very characteristic, brown, circular areas on the leaves. The spots vary in size from 1–5 mm., and are frequently somewhat irregular in outline. At first, they are dark-brown with a darker, almost black border; later, the centers become tan and sometimes gray but always have a definite dark margin. The spots are frequently so abundant that they fuse, causing the drying of large portions of the leaf.

Septoria pertusa

Amphigenis; maculis magnis, 1–2 cm., indefinitis, brunneolis, fulvo-marginatis, dein margine pallescentibus, confluentibus; peritheciis innatis, fuscis, ostiolo amplo pertusis; sporulis hyalinis, rectis vel leniter curvulis, leniter clavatis, guttulatis, 60–75 $\times$ 3 μ.

On *Sorghum halapense* L. Luling, *2270;* Flatonia, *2722* (*type*).

The diseased areas are elongated parallel to the veins and 1–2 cm. in length, without a definite margin. The brownish center is surrounded by a yellow zone which pales out into the green. These areas become confluent, so that entire leaves may become dry and yellowish-brown in color. The flask-shaped pycnidia are very abundant on both surfaces and protrude by a short papilla. The conidia are extruded so abundantly as to make a white coating.

Stagonospora gigantea

Areis marginalis plerumque apice foliorum arescentibus, griseolis, zonatis; pycnidiis initio subcutaneis, dein erumpentibus,

atris, 500–600 μ diam.; conidiis magnis, hyalinis, dense granulosis, interdum guttulatis, cylindraceis v. leniter clavatis, 3-septatis, 72–115 × 13–15 μ.

On living leaves of *Agave Americana* L. Austin, *1283* (*type*); San Antonio, *1377;* Boerne, *1648*.

The blight begins at the tips or margins of the leaves and advances toward the base. The diseased tissue becomes dry, gray, and zonate, marking the periodic growth of the fungus. The pycnidia are on both leaf surfaces, covered at first and at length protruding. Our species differs from *S. macrospora* (Dur. & Mont.) Sacc. in having much larger spores and also larger pycnidia. This disease has been very serious, blighting the plants in all the localities where it was observed.

Colletotrichum caulicolum

Acervulis sparsis, nigris, lenticularibus, 150–250 μ. Setis copiosis, brunneis, septatis, utrimque rotundatis vel superne acutis, 60–120 × 3.5–4 μ; basidiis 30–60 μ, cylindraceis, hyalinis, plerumque 1–2-septatis; conidiis falcatis, hyalinis, granulosis, 18–30 × 3.5–4 μ.

On living stems of *Phaseolus vulgaris* L. Uvalde, *1963* (*type*).

A destructive disease of the Kentucky Wonder bean, observed in a single locality, was found to be due to this fungus. A superficial examination of the affected field showed a considerable number of plants which were completely dead, others were dying, while still others that were less affected exhibited more or less chlorosis of the foliage. An examination of the root system showed it to be in normal condition, while the only deviation from the normal in the foliage was the marked chlorosis.

An examination of the stems showed that brown, depressed cankers were present an inch or more above the ground level. The cankers were longitudinally elongated (2–4 cm.), more or less irregular, rough and somewhat fissured or open. On the chlorotic plants the canker occupied one side of the stem, on the plants that were dying the stem was nearly girdled, and on all dead plants examined the canker had completely encircled the stem.

The acervuli do not occur on the young cankers, but nearly mature or complete cankers show a few which are visible to the naked eye as small black specks, while they become much more abundant on the stems of plants which have been dead for a few days.

Colletotrichum griseum

Areis initio indefinite marginatis, flavidis dein definitis, margine brunneo elevato, centro griseis, 8–10 mm. latis; acervulis zonatis vel sparsis, primo tectis, globulosis vel lenticularibus, 250 μ diam.; setis numerosis, brunneis, cylindraceis, saepe superne attenuatis, 40–60 × 5 μ; conidiis rectis vel leniter curvulis, granulosis, guttulatis, hyalinis, raro inaequaliter 1-septatis, 14–17 × 4 μ.

On leaves and branches of *Euonymus japonicus* Thunb. Austin, *1280* (*type*); San Antonio, *1404;* Lockhart, *2110;* Georgetown, *2363, 2375, 2376.*

This is one of the most common diseases of the Chinese box for this region. It forms on the leaves indefinite-margined, yellow blotches 1–4 mm. in diameter. These increase in size until the diseased areas are sometimes 8–10 mm. across, and a definite brown elevated border is formed, when the center of the spot becomes gray. Scattered over this gray area are numerous black acervuli either zonate or more or less scattered, usually concentrically arranged. Often the spots are marginal or the disease may even apparently work back from the tip of the leaf. The twigs and larger branches are also affected, resulting in the formation of gray cankers 1–8 mm. in diameter. These gray patches drop away, leaving the brown cankered area exposed.

Cylindrosporium defoliatum

Areis irregularibus, griseolis, initio 1–2 cm. diam., confluentibus, saepe partem majorem foliorum occupantibus; acervulis amphigenis, plerumque epiphyllis; conidiis cylindraceis, hyalinis, 30–42 × 3–3.5 μ, 3–5-septatis.

On *Celtis mississippiensis* Bosc. New Braunfels, *1673;* Austin, *1728, 1905* (*type*); Beeville, *1855;* Elgin, *1890;* Bastrop, *2049;* Lockhart, *2073;* San Marcos, *2099;* Cotulla, *2180;* Luling, *2256;* Seguin, *2317;* Georgetown, *2377;* Victoria, *2509;* Cuero, *2578;* Stockdale, *2615;* Gonzales, *2689;* Flatonia, *2709;* Yoakum, *2771.* On *Celtis reticulata* Sarg. Sabinal, *1975.*

The common hackberry of this region, *Celtis mississippiensis,* is quite generally affected with a serious leaf blight which first produces irregular gray blotches 1–2 cm. in diameter. These blotches sometimes coalesce and involve a large part of the leaf. In early stages of the disease the adjacent tissue may remain green, but later a considerable amount of yellowing is produced and the affected leaves fall from the tree. The acervuli are amphigenous, but more abundant upon the upper surface. The spores are extruded in masses and accumulate on the surface of the leaf where they are visible as minute white tufts. This species is clearly distinct from *Cylindrosporium Celtidis* Earle, which has been described as forming small spots on *Celtis mississippiensis* in Alabama.

Cylindrosporium griseum

Maculis variis, numerosis, orbicularibus vel leniter angulatis, 1–5 mm. latis plerumque 1–2 mm., saepe confluentibus; acervulis amphigenis, in venis, orbicularibus vel elongatis, maturitate atris; conidiis cylindraceis, leniter curvulis, hyalinis, 7–9-septatis, 90–135 × 3–4.5 μ.

On leaves of *Sapindus marginatus* Willd. Kerrville, *1588;* Llano, *1757* (*type*); Bastrop, *2026;* San Marcos, *2098.*

Very numerous grayish or whitish, circular or slightly angular spots are produced on both surfaces of the leaflets and the rachis; and show more prominent veins owing to the shrinking of the tissue. These spots may become confluent and cause extended dead areas. The acervuli are amphigenous, more abundant on the upper surface, and are located immediately over the prominent veins. They may be nearly circular in outline or much elongated along the veins, pale when young and becoming darker with age.

Cylindrosporium Lippiae

Maculis 2–3 mm. diam., centro griseolis, margine angusto brunneo cinctis; acervulis amphigenis, plerumque epiphyllis, 30–100 μ diam.; conidiis subcylindraceis, hyalinis, continuis vel 1–3-septatis, 24–54 × 3 μ.

On leaves of *Lippia ligustrina* Britton. Llano, *1756* (*type*).

This fungus produces three or four circular spots on each leaf.

The spots have gray centers, with narrow brown borders edged with a tinge of yellow, and show in the center numerous white conidial tufts.

Cylindrosporium solitarium

Maculis numerosis, minutis, .5–1 mm. diam., initio atro-brunneis, deinde centro plus minusve pallescentibus vel albescentibus ac margine angusto viride cinctis; acervulis hypophyllis, initio innatis 1–2 in quaque area; conidiis plerumque leniter curvulis, cylindraceis, hyalinis, 3–6-septatis, 45–60 × 3–4 μ.

On living leaves of *Robinia pseudacacia* L. Austin, *459, 1909 (type)*; Georgetown, *2334*.

This disease is characterized by the presence of minute brown spots upon the leaflets. In the early stages of the disease the leaflets have their normal green color and the spots show as circular areas, which have a pale-brown center and a narrow darker brown border surrounded by a faint zone of chlorotic tissue. As the disease progresses the entire leaflet turns to a bright-yellow color, with the exception of narrow zones of pale-green which persist around the circumference of the brown spots. In this stage the spots show an outer zone of green, a middle zone of dark-brown, and a central area of light-brown or grayish tissue. Affected leaflets may show from one to forty spots and these are generally isolated, although they may be somewhat clustered. The leaflets fall soon after they assume the yellow color, and sometimes even before the complete chlorotic stage has has been reached, and in many cases considerable defoliation results. The disease was observed during the season of 1908 in a much more severe form than during the past season. In all cases it was observed only on nursery trees which were badly crowded. Each spot shows one and occasionally two acervuli, which occupy the middle of the light-brown central area. A straight or curved mass of spores may be seen extruded from the acervulus, which is immersed in the tissue of the under surface.

Cylindrosporium tenuisporum

Plerumque hypophyllis, saepe epiphyllis; maculis leniter irregularibus, superne brunneis, centro griseolis, margine angusto flavido cinctis, inferne aequaliter brunneis, 2–10 mm. diam.;

acervulis nigris, minutis; conidiis cylindraceis, hyalinis, continuis, rectis v. leniter curvulis, 15–24 × .75–1 μ.

On leaves of *Ulmus crassifolia* Nutt. Austin, *307* (*type*).

The small-leaved elm is affected by a leaf spot which shows as brown, circular or slightly irregular areas, generally with a gray center and a narrow yellow border. The under surfaces of the spots are more uniformly brown and show minute black specks, the acervuli of the fungus. In a few cases the acervuli may be found on the upper surface.

Cercospora adusta

Areis magnis, marginalis, atro-brunneis; maculis veteribus adustis, juvenibus dilute brunneis, margine flavida late cinctis; conidiophoris amphigenis, caespitosis, brunneis, septatis, 100–150 × 4–5 μ; conidiis dense granulosis, subhyalinis, pluriseptatis, 85–160 × 3–4 μ.

On leaves of *Ligustrum californicum* Hort. Falfurrias, *2471* (*type*); Floresville, *2851*.

This species forms dark-brown areas involving large spots frequently extending from the tip downward or from the margin inward. Rarely are the spots removed from the margin. The older diseased parts become very dark and the newer brown, with a gradual shading out into the chlorotic tissue.

Cercospora atricincta

Maculis irregularibus, angulatis, centro griseis, brunneo marginatis, 1–2 mm. diam., interdum 4 mm. diam., late purpureo marginatis; conidiophoris amphigenis, caespitulis minutis, septatis, 45–70 × 3.5–4.5 μ; conidiis dilute brunneis, pluriseptatis, clavatis, 100–200 × 4–4.5 μ.

On leaves of *Zinnia* sp. San Antonio, *1381*, *1660;* Victoria, *2506* (*type*).

This disease, rather common in gardens, is characterized by the presence of irregular, angular, gray spots with a brown border. When the spots are abundant this border is narrow and the spots are small, 1–2 mm. in diameter. When they are few they may be 4 mm. in diameter, with a broad marginal zone of purple or dark-brown.

Cercospora aurantia

Maculis atro-brunneis, flavidis cinctis, 6–10 mm. lato; hyphis fertilibus hypophyllis, brunneis, septatis, denticulatis, vel nodulosis; conidiis dilute brunneis, clavatis, pluriseptatis, 75–135 × 4–5 μ.

On *Citrus Aurantium* L. Falfurrias, *2446* (*type*).

This fungus forms large spots, 6–10 mm. in diameter, and suborbicular except when they are marginal. They are dark-brown in color with a lighter brown center and surrounded by a region of yellow which fades out into the green of the leaf. The conidiophores, formed on the lower surface in small groups, show plainly the points of attachment of the conidia.

Cercospora Capsici

Maculis rotundatis, 1–7 mm. diam., primo brunneis deinde pallescentibus brunneis, zona flavida cinctis; conidiophoris amphigenis, brunneis, 10–15-fasciculatis, septatis, 30–60 × 4.5–5.5 μ. Conidiis plerumque rectis, clavatis, dilute brunneis, septatis paucis, 75–125 × 4–5 μ.

On *Capsicum annuum* L. Cuero, *2592* (*type*).

Leaves infested with this fungus form spots 1–7 mm. in diameter, mostly circular or subcircular. The spots are raised on the upper surface, brown at first, later becoming grayish-brown. They are margined by a very definite darker zone outside of which is a more or less extended halo of yellow. Where the spots are abundant the leaves become chlorotic, wilt and fall.

Cercospora Chrysanthemi

Areis superne elevatis, inferne depressis, 2–10 mm. lat., margine elevata, subcircularibus vel irregularibus, brunneis maturitate griseolis. Conidiophoris amphigenis, dense aggregatis, septatis, 40–75 × 4 μ; conidiis clavatis, pluriseptatis, subhyalinis, 40–120 × 4 μ.

On *Chrysanthemum* sp. San Antonio, *1659* (*type*).

The diseased areas are raised above and sunken below and vary much in size. They have very definite elevated borders, are subcircular or irregular in outline, and brown in color, becoming gray with age. When the spots are abundant, the leaf becomes brown between the diseased areas.

Cercospora Crataegi

Maculis magnis, atro-brunneis irregularibus, inferne pallidioribus, 5–10 mm. latis; confluentibus quandoque numerosis; conidiophoris dense fasciculatis, continuis, brunneis, 24–30 × 5–6 μ; conidiis clavatis, rectis curvulisve, pluriseptatis, guttulatis, 120–180 × 5–7 μ.

On leaves of *Crataegus* sp. Gonzales, *2697* (*type*).

This fungus causes the formation of large dark-brown, irregular areas from 5–10 mm. or more in diameter. The spots are darker above than below and when as many as 20–25 in number are confluent, involving large areas with chlorotic tissue surrounding them. The upper surface is broken by the numerous brown tufts of conidiophores and conidia.

Cercospora Elaeagni

Amphigenis; maculis orbicularibus v. suborbicularibus, 1–2 mm. latis, centro griseolis vel brunneolis, margine brunneo definite cinctis, saepe totum folium flavidis: conidiophoris fasciculatis, plerumque epiphyllis, atro-brunneis, 40 × 3.5–4 μ; conidiis septatis, subhyalinis, clavatis, rectis curvulisve, 28–150 × 2.5–4 μ.

On living leaves of *Elaeagnus* sp. Floresville, *2861* (*type*).

When this disease is present the leaves show on the upper surface an abundance of circular or subcircular spots 1–2 mm. in diameter, with a definite brown border and a whitish or brown center. The spots are inconspicuous on the under surface on account of the dense silvery tomentum. There is generally some yellowing beyond the spots and in many cases a pronounced yellowing of the whole leaf.

Cercospora Fici

Maculis magnis, angulatis, superne brunneis, atro-marginalis, inferne aequaliter flavido-brunneis, 1.5–10 mm. diam. saepe confluentibus; conidiophoris dense fasciculatis, epiphyllis, dilute brunneis, 24 × 4 μ; conidiis clavatis, brunneis, pluriseptatis, 60–180 × 3–4.5 μ.

On a variety of *Ficus Carica*. Victoria, *2501;* Cuero, *2593* (*type*); Gonzales, *2674;* Flatonia, *2711;* Hallettsville, *2784*.

This disease appears late in the summer, forming on the leaves large angular or irregular spots, which are dirty-brown above

with a darker border, and uniformly yellowish-brown below. The disease was very abundant in several localities, involving half of the leaf surface and causing the leaves to fall.

Cercospora floricola

Areis indefinitis, effusis, griseolis vel brunneolis, maturitate atrofuscis, perianthium partem majorem v. totum occupantibus saepe scapum insidientibus; conidiophoris dense fasciculatis brevibus, brunneis, continuis, 30–45 × 5–6 μ; conidiis plerumque rectis, cylindraceis v. leniter clavatis, hyalinis vel pallide brunneis, 1–5-septatis, 18–69 × 5–5.5 μ.

On *Yucca rupicola* Scheele. Austin, *1438* (*type*).

In this disease, elongated grayish or brownish patches are produced which become darker with age and spread over the main scape, the flower pedicels, and the outer divisions of the perianth. The creamy-white outer perianth segments may be completely covered with the conidial tufts, which cause them to be turned nearly black and to shrivel more or less. The fungus may spread over the whole segment from the tip downwards. The perianth divisions may be attacked before the flower opens and the flower bud completely blighted or the flower may expand to full size and open in the normal way but blight completely a little later. In the locality where the disease was prevalent fruit formation did not take place.

Cercospora fulvella

Epiphyllis interdum amphigenis; maculis irregularibus, flavido-brunneis, 5–10 mm. diam., confluentibus, areas magnas insidientibus necantibusque, inferne pallidioribus; conidiophoris aggregatis, septatis, 40–150 × 4–5 μ; conidiis clavatis, rectis, 3–4-septatis, pallide brunneis, 40–60 × 4–5 μ.

On leaves of *Verbesina texana* Buckl. Austin, *406* (*type*).

This disease is characterized by the presence of irregular yellowish-brown areas, which sometimes become confluent, causing the death of larger areas. The color is more dilute and the spots are less definite on the under surface of the leaf.

Cercospora lanuginosa

Epiphylla; maculis foliorum primo indefinite marginatis, atro-brunneis, deinde 1–3 mm. lata, definita, margine brunnea cinctis,

centro griseolis; conidiophoris dense aggregatis, 15 μ longis; conidiis cylindraceis, leniter clavatis, fumagineis, 3–4-septatis, 45–54 × 4–5 μ.

On *Bumelia lanuginosa* Pers. Luling, *2222 (type)*; Flatonia, *2742*.

This disease first appears as indefinite margined, dark-brown spots on the upper surface of the living leaf. At length these areas become irregular in outline with a definite brown margin and a grayish center. Owing to the woolly coating on the lower surface, the leaf spots show through only faintly as brown areas. Scattered over the upper surface of the spot are very dense clusters of conidiophores.

Cercospora Lythracearum

Amphigenis; maculis subcircularibus, indefinite marginatis, superne atro-brunneis, zona flava limitatis, inferne flavo-brunneis, 2–8 mm. diam.; conidiophoris dense aggregatis, pallide brunneis, plerumque epiphyllis, continuis, 15–30 × 3 μ; conidiis clavatis vel subcylindraceis, subhyalinis, 30–56 × 3–3.5 μ, 2–5-septatis.

On *Lagerstroemia indica* L. Austin, *466 (type)*. On *Punica Granatum* L. Beeville, *1829;* Victoria, *2510, 2515;* Cuero, *2589;* Flatonia, *2738;* Falfurrias, *2472*.

On the crape myrtle, circular to subcircular, indefinite margined areas appear on the foliage. These spots are uniformly yellowish-brown below and dark-brown above, with a limiting zone of yellow tissue paling out into the green. On the pomegranate, this fungus produces angular, more or less rounded brown spots with an indefinite margin below.

Cercospora macromaculans

Amphigenis; areis magnis 1 cm. lat., brunneis arescentibus, plus minusve irregularibus, centro griseolis, saepe zonatis; conidiophoris dense aggregatis, septatis, atro-brunneis, 60–75 × 6 μ; conidiis clavatis apice gradatim attenuatis, septatis, subhyalinis, 70–187 × 2.8–3 μ.

On *Syringa* sp. Kerrville, *1603 (type)*; Austin, *463, 1910*.

This blight is characterized by the presence of large brown, dead patches, which are more or less irregular and either central or marginal. The center of the spots is frequently gray, and

sometimes an evident zonation is exhibited due to the concentric arrangement of the dark conidial tufts. This blight causes the death of many leaves and much defoliation.

Cercospora Malachrae

Maculis orbicularibus vel suborbicularibus 1–4 mm. diam., centro flavido-griseis, purpureo-marginatis; conidiophoris caespitosis, amphigenis nodulosis, apice pallidioribus, 90–120 × 4–5 μ; conidiis clavatis, hyalinis, apice attenuatis, 100–210 × 4–5 μ, pluriseptatis.

On *Malachra capitata* L. Victoria, *2347* (*type*).

Circular or subcircular spots are produced on the living leaves. They have a yellowish-gray center, on which the conidial tufts are evident, surrounded by a dark-purple border. The spots are slightly less pronounced upon the under surface.

The conidiophores are amphigenous, in fascicles of a few to a dozen, brown, with slightly paler tips, nodose extremities, and several septa. This species of *Cercospora* seems to be distinct from the many described for different species of the Mallow family. It agrees most nearly with *C. polymorpha* Bubank.

Cercospora obscura

Maculis rotundatis, griseis, zona dilute brunnea circumdatis, 1–2 mm. latis; conidiophoris epiphyllis, fasciculatis 4–7, brunneis, apice hyalinis 50–80 × 4–5 μ; conidiis rectis curvulisve, cylindraceis, 3–4-septatis, dilute brunneis, 40–74 × 3–4 μ.

On living leaves of *Cynara Scolymus* L. Beeville, *1861* (*type*).

The presence of this disease is made manifest by circular, gray spots, which appear on the upper surface of the leaf in great numbers. Each spot has a faint brown border with the tufts of conidiophores on the upper surface. Since the lower surface of the leaf is covered by a silvery tomentum, the spots appear as slightly darker areas.

Cercospora perniciosa

Maculis rufo-brunneis, atro-marginalis saepe zonatis, inferne pallidioribus, 3 cm. diam., confluentibus, foliis omnibus occupantibus; conidiophoris dense fasciculatis, hyalinis vel dilute brunneis, 40–50 × 3–4 μ; conidiis clavatis, guttulatis, obscuro septatis, 40–105 × 3–4 μ.

On *Cephalanthus occidentalis* L. Victoria, *2539* (*type*); Austin, *2869*.

When this disease is present the entire foliage of the tree is seriously affected. Isolated spots are about 1 cm. in diameter, and reddish-brown with a darker border. The spots often have narrow rings of this darker brown tissue, rendering them zonate. Most commonly these spots are irregular in outline, as the diseased areas have fused, causing a large part of the leaf to become dry. The lower surface of the spots is much more dilutely colored; on the upper surface, the profusion of conidiophores and conidia render the spots grayish. Where the disease has been observed the trees are almost entirely deprived of their leaves.

Cercospora Prosopidis

Maculis irregularibus, angularibus, brunneis, margine angusto atro-brunneo limitatis, initio saepe folii margine insidientibus demum totum folium occupantibus necantibusque; conidiophoris amphigenis, dense aggregatis, aequaliter brunneis, continuis, 18–30 × 3–4 μ; conidiis rectis, brunneolis, cylindraceis v. leniter clavatis, 1-pluriseptatis, 20–70 × 4–5 μ.

On *Prosopis glandulosa* Torr. Uvalde, *1959* (*type*); Luling, *2264;* Gonzales, *2663;* Falfurrias, *2468;* Kennedy, *2824;* Floresville, *2847*.

This disease is characterized by the presence of irregular, angular, brown patches which occupy one side of the midrib of the leaflets or extend across the whole leaflet, and are generally bounded by a narrow brown border. The spots may be either terminal or removed from the apex of the leaflet, and frequently advance until the whole leaflet is killed or drops from the tree. In some cases it is very abundant and causes considerable defoliation. Its greatest development may be found in dense mesquite thickets.

Cercospora xanthicola

Maculis numerosis, interdum 400–600 in quoque folio .5–2 mm. lat. (plerumque 1 mm.), centro cini-griseolis vel brunneolis, margine atro-fusco angusto limitatis; conidiophoris amphigenis, 3–8-fasciculatis, apice hyalinis, nodulosis, continuis, raro septatis, 60–100 × 3–3.5 μ; conidiis tenuisimis, clavatis, gradatim attenuatis, apice obscure septatis, subhyalinis, 105–135 × 3 μ saepe 245 μ longis.

On *Xanthium* sp. Luling, *2236;* Georgetown, *2383* (*type*); Nursery, *2567;* Cuero, *2588;* Gonzales, *2705;* Yoakum, *2755;* Hallettsville, *2790;* Kennedy, *2836;* Austin, *2871.*

This fungus produces upon the leaves numerous circular or subcircular spots with dirty-gray or brownish centers surrounded by a narrow darker border. The number of infections on a single leaf may reach as high as 400 to 600, in which case the leaf shows more or less chlorosis, but frequently the spots are less numerous and the leaf shows little or no deviation from the normal color.

Clasterosporium diffusum

Maculis indefinite marginatis, amphigenis; irregularibus, aequaliter brunneis, 5–10 mm. diam.; hyphis effusis, prostratis, saepe laxe gregariis atque erectis; conidiis curvulis, clavatis, pluriseptatis, brunneis, 45–135 × 4–5 μ.

On *Hicoria pecan* (Marsh) Britton. Victoria, *2536;* Gonzales, *2695* (*type*); Yoakum, *2770;* Hallettsville, *2783.*

This fungus produces circular or irregular, indefinite margined, brown spots, which are uniformly brown on both surfaces of the leaflets. Dark-brown hyphae run throughout the dead tissue or creep over either surface of the affected area, or are sometimes aggregated to produce clusters of erect conidiophores.

Helminthosporium giganteum

Caespitulis sparsis, epiphyllis, maculis stramineis, .5–1 × 1–4 mm., confluentibus; hyphis fertilibus atro-brunneis, plurispetatis, base leniter inflatis, 200–400 × 9–12 μ; conidiis cylindraceis 5-septatis, pallide brunneis, granuloso farctis, 300–315 × 15–21 μ.

On *Capriola Dactylon* (L.) Kuntze. Falfurrias, *2440* (*type*).

This disease is charactertized by the presence of numerous yellowish or pale straw-colored spots, longitudinally elongated and with a narrow brown border. The spots are generally absent from the leaf sheath, and when numerous they may become confluent on the lamina and thus cause somewhat extended dead areas.

Ramularia hedericola

Maculis magnis, irregularibus, superne griseolo-brunneis, inferne aequaliter brunneolis, margine elevato; hyphis epiphyllis, septatis, 60–120 × 4 μ; conidiis hyalinis, 9–15 × 2.5 μ.

On *Hedera Helix* L. San Marcos, *2130* (*type*).

Large irregular spots, grayish-brown above and brown below, appear on the living leaves. The margin of the diseased area is elevated, with the conidial tufts on the upper surface.

Ramularia Momordicae

Maculis initio indefinitis, flavidis, tum demum suborbicularibus, superne flavido-brunneis, plus minusve zonatis, 1–10 mm. diam., inferne margine elevato, atro-brunneis, saepe numerosis, confluentibus, folium totum arescentibus; hyphis caespitosis, brunneis, 30–45 × 4–5 μ; conidiis cylindraceis, hyalinis, 1–5-septatis, 42–65 × 4–5 μ.

On *Momordica balsamina* L. Falfurrias, *2482* (*type*).

In the early stages of this disease the leaves show irregular blotches of yellow, and as it advances there are formed, on the upper side of the leaf, circular to subcircular yellowish-brown areas with a more or less evident zonation. The spots are often so numerous as to be confluent, causing the leaves to curl and become dry. A large amount of defoliation results.

Exosporium concentricum

Areis subcircularibus, .5–2 cm. diam.; zonatis, brunneis v. flavidis interdum griseis, zona angusta brunnea cinctis; sporodochiis concentricatis v. sparsis, initio innatis; conidiis clavato-cylindraceis, septatis, subhyalinis, rectis vel leniter curvulis, 25–45 × 2.5–3 μ.

On *Euonymus japonicus* Thunb. San Marcos, *2129;* Georgetown, *2375;* Austin, *2867* (*type*).

This fungus produces on the leaves of the Chinese box circular, zoned areas. The affected leaves may show considerable yellowing beyond the diseased areas and in severe cases much defoliation follows. The sporodochia are at first covered and at length protrude, causing that portion of the leaf to become grayish, because the rupture of the epidermis has admitted the air.

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